Risk attitudes and economic security to constitutional change: Catalan & Scottish cases

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Abstract

This paper tries to analyse both risk attitudes and material security as possible causes of change in political decisions and behaviours from the local population in Catalonia and Scotland. In other words, the aim is pointed at the change of mind due to internal reasons, which here are attitudes facing risk and households' economic situation. I obtained significant and positive results of risk attitudes as a determinant of support for independence in both regions. National identity, first language spoken and economic expectations are as well strong factors of determining this support in Catalonia. However, it is still not clear enough to assume that the economic argument matters in explaining secession's support in Scotland.

JEL classification: D81, E24, H77, J64, R23

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« L'injustice produit à la fin l'indépendance. »

"Injustice in the end produces independence."

François-Marie Arouet, known as Voltaire, Tancr. IV, 6, XVIII century.

Introduction

Separatist movements are not new. As a reminder, the two previous centuries had been marked by states who claimed their independence following a peace process with their respective coloniser, but first mainly through wars or revolutions. Nonetheless, these independent movements are completely different to the actual ones presents in Europe and North America. Indeed, regions marked by these independence movements are intra-state movements. And even with this geographical proximity, national identities persist. *Catalunya*, *Còrsega, Euskal Herria, Lombardia, Québec*, Scotland, *Veneto*, *Vlaanderen* are the main representative places today of this regionalism. But national identity is not the only motive of these separatist movements. Indeed, the latest referendum that occurred in Catalonia had been marked by its virulent events. The illegal referendum was so close to not occur, but it finally did. And why did it happen? Because people took risks. And, what was their motivation based on? Opinions differ depending on who and how you are asking. But this motivation is mainly built from cultural and economic arguments. Talking about economic arguments, it may refer to the fact that people can feel insecure regarding their future economic situation. Indeed, the last financial crisis had a huge impact on populations economic well-being. And because individuals are feeling unstable economically talking, it might motivate them to take risks.

Hence, the matter of this paper is to analyse both risk attitudes and material security as possible causes of change in political decisions and behaviours from the local population. In other words, the aim is pointed at the change of mind due to internal reasons, which here are attitudes facing risk and the economic situation of each households. The two regions I decide to conduct my study are Catalonia in Spain and Scotland in the United-Kingdom.

To understand the implications of both factors on constitutional change, it is important to remind the definition of risk attitudes and economic well-being. First, we could separate the definition of both risk and attitude. From one side, risk is defined by the uncertainty of an objective that could have a positive or negative effect. Attitude is a chosen state of mind, mental view or disposition with regard to a fact or state. Thus, combining both it gives a definition of risk attitude as a chosen response to uncertainty that matters, driven by perception. On its side, economic well-being is a multi-dimensional concept. Indeed, economic well-being could be measured through different

factors such as income, wealth, unemployment, financial situation or else feeling of security. In fact, when we compare risk attitudes with economic security we could observe many common aspects between them, such as the risk of losing a job or the risk of being poor. This last point will be enlightened into the next section.

From both definitions a problematic might be formulated, which is: are risk attitudes and material security playing a role in the support for independence? Until now, risk attitudes had received few attentions through its effects over political behaviour (Henderson, Delaney and Liñeira 2014; Glen 2015; Verge, Guinjoan and Rodon 2015). In this context, I am interested to look at whether risk attitudes play a role to influence voters in their decision making, and if yes, may economic security situation interfere in between both risk attitudes and the support for secession. On the other hand, material security had received many interest (see for Catalonia: Civit i Carbonell 2013; Muñoz and Tormos 2015; see for Scotland: Glen 2015; Henderson, Delaney and Liñeira 2014; see for both regions: Muro and Vlaskamp 2016). However, it is not always clear if there is whether a positive or negative causality from the households' economic situation on the support for independence. This is what this study aims to identify, whether there is a positive or negative effect of households' economic situation over secession, and if additionally, risk attitudes feed this effect.

The following article is built as follows. The first section relates my theoretical arguments regarding the relationship between risk attitudes and economic security, and analyses their empirical implications through a literature review. Conducting by the first section, the second section presents the data, the empirical research of this study and its results. Finally, the last section displays the main findings, their conclusions and possible implications I could get from it, and suggests some trails for further studies.

1. Theoretical argument

1.1. How risk and economic security could affect constitutional change?

Many studies had demonstrated the existing causality of people confronted to make decisions involving risk. However, as mentioned before, few studies have studied the implication of risk on political behaviours, and specially for constitutional change.

First talking about the causality between risk and decision makings, a sustainable reference is the one of van Schie and van der Pligt (1995). Indeed, the authors analysed the implication of framing and salience on decision makings. They found out that people facing a gain problem tend to decrease their risk preferences instead that in loss problems people are riskier in their choices. But framing is not the only reason of this difference in risk preferences. Fagley and Miller (1990) argued that gender may be a reason of these

differences in decision makings involving risk. Following the same argument, Dohmen, Falk, Huffman, Sunde, Schupp and Wagner (2011) argued that not only gender, but age, height and parental background have as well a significant impact on the willingness to take risks. Moreover, the implication of risk on political behaviours have been as well analysed. In fact, Nadeau, Martin and Blais (1999) sustained that attitude towards risk-taking has an impact on individual choices and thus on the referendum that occurred in 1995 in Quebec.

Going back to the actual context, Glen (2015) sustained in her paper that before the financial crisis of 2007, Scottish working class would rather not vote for secession. Thus, she argued that the risk-averse tendencies that before characterised the low-working class of Scotland had now been weaker due to the economic crisis. In the paper of Henderson, Delaney and Liñeira (2014), the authors analysed several factors concerning risk and its potential implications on constitutional change. Additionally, they tried to create a model representative of the support for the Yes vote based on the distinct relationships they obtained on risk and other factors. In the case of Catalonia, the authors Verge, Guinjoan and Rodon (2015) argued that under some conditions there exist gender differences in risk attitudes that will lead to a gender difference in support for independence. Supporting their assumptions on previous research, the authors sustained the argument that "because the outcomes of independence are uncertain, risk disposition is likely to affect how citizens shape their preferences toward secession". Indeed, similar to Scotland's situation, Catalan's referendum until the very same day of the consultation was not sure to occur. Thus, it shows how much risk attitudes at an individual level can play an important part in decision makings over constitutional change.

From those findings, I assume that risk attitudes at the individual level may affect the support for constitutional change.

Now concerning material security, many factors to analyse come in mind. Indeed, income, gross domestic product or wealth would all be interesting variables to identify the economic situation of potential Yes voters for independence. Nevertheless, there is another factor that could be useful for my study and that is easier to analyse: unemployment. But the question that first comes in mind is; could unemployment be used as an indicator to know if people are taking decisions because of their working situation, and therefore depending on their economic situation?

First, unemployment is not always a stroke of bad luck, if not that people can take advantage of being unemployed for a time and make decisions to resolve it. Indeed, Levine (1993) provided some evidence that unemployed persons that do benefit from unemployment insurance are spending less effort in finding a new job, which leads to longer duration of unemployment. In the same idea, Krueger and Muller (2009) found out that job search effort increases as the benefits from the financial support are exhausted

(see as well, Baker and Fradkin, 2013). Another phenomenon had been analysed first by Katz (1986), which is that unemployed people are more favourable to come back to their previous job rather than switching (see as well, Fujita and Moscarini, 2015). Finally, Marmora and Ritter (2014) showed that a long period of time with a high unemployment rate could discourage workers and overstate the true state of the actual labour market. Hence, because workers would be discouraged, it could misinterpret their vision and affects their risk attitudes. All these last points show that unemployed people are taking decisions not only because they are unemployed, if not because they have individual preferences that depend on their working situation and the possible insurance they could get in return.

Moreover, several papers had studied the impact of unemployment at a macro level over constitutional change (see Glen, 2015; Henderson, Delaney and Liñeira, 2014). Indeed, Glen (2015) noticed some spatial distinctions in support for secession in Scotland because areas have different levels of unemployment. However, it is important to remind that both regions studied here, Catalonia and Scotland, are confronted to a problem of unemployment due to the financial crisis of 2007, even if today in 2018 both regions are recovering their respective level of unemployment pre-crisis. Nevertheless, the data I used for my research were from two surveys of 2016 and 2017, respectively for Scotland and Catalonia. Hence, people are facing a real problem of unemployment at this time.

In this global context, Scottish people feel insecure concerning their social benefits as Catalan are worried about losing their economic prosperity. Because of these actual fears, a considerable increase had been noticed regarding the support for independence in both regions over the last decade. Following the previous logic, at an individual-level, citizens can make decisions to improve their economic situation regarding their individual preferences. And today, it seems that the trend in both regions goes towards a secession process. Thus, I assume that unemployment at the individual level has an impact in determining constitutional change.

Before going through the empirical implications of these theoretical arguments, I wanted to extend my research. Indeed, after creating the models I was thinking that awareness of economic outcomes following independence could affect whether positively or negatively risk attitudes of an individual. I explain, in some studies such as the one of Verge, Guinjoan and Rodon (2015), the authors argued of the possible heterogeneous effects of risk attitudes across gender. From this, they conduct an experiment where they treated two groups, one positively, the other negatively by informing people about the economic consequences of secession and control for a third group (see a similar experiment from Muñoz and Tormos, 2015). And in fact, they found out significant results. In general, people that went through a positive treatment were more likely to be

in favour of independence, and vice versa. Hence, treatment is able to modify individual's preferences and thus their voting intentions as well.

Following this process, I was thinking that it would be interesting to perform the same experiment and see if whether risk attitudes could create heterogeneous effects across unemployment. However, within the expected time frame of my research I can not provide any experiment such as this one and moreover, none of the surveys I use is asking to people if they feel well or bad informed. Thus, I let this experiment to further studies and I focus my research on the interpretation of the interaction term between risk attitudes and unemployment (see section 2.2.). Nevertheless, section 2.3. provides some interesting results concerning the economic argument as a motivation for independence.

1.2. Empirical implications

To come back to the main idea of this thesis, and to its main difficulty, it tends to generalize some behaviours – such as risk – of a population that is in extreme disagreement. Thus, the hypothesis that would come out of this research might appear as senseless. However, it is important to keep in mind that the results presented later are probability, which in this sense does not lump the entire population of a region together. Another point is that in somehow, this research is extended to the population's expectations of the economy and not only to risk and unemployment.

From the previous analysis, it is clear enough to mention that both populations of Catalonia and Scotland are facing some dilemma concerning their possible future sovereignty. And risk attitudes deal with this topic. Therefore, how do risk attitudes at the individual level could affect individual preferences on constitutional change?

Concerning Scotland, Glen (2015) found out some evidences of causality of risk attitude over constitutional change. In fact, she affirmed that this causality effect is due to economic factors that I will comment below. Concerning risk, she argued that people who risk more for their respective economic situation would rather not be in favour of independence. Thus, risk-averse people are unlikely to be in favour of independence. In the same direction, the study of Henderson, Delaney and Liñeira (2014) clearly demonstrated that the more people are risk-taker, the more likely they would vote Yes for secession.

For Catalonia, the authors Verge, Guinjoan and Rodon (2015) analysed the heterogeneous effects across gender of risk attitudes over secession. As mentioned previously, risk attitudes of citizens – not only in Catalonia, if not as well in Scotland – played an important role over the last referendums that occurred in both regions. Hence,

the authors sustained the fact that riskier people are more likely to support constitutional change and in other words, independence.

Therefore, the analysis that always comes out in both regions is that, the more people are prepared to take risks, the more they will support independence. And here is the key to build my first assumption.

Hypothesis 1*: People that are more risk taker are more likely to be in favour of independence.*

Several studies found out that in Catalonia the higher the household's income and the more stable its working situation, the stronger the support for independence. How could we interpret this? Probably as a phenomenon of stability and security. However, in case of Scotland it appears the exact contrary.

In my knowledge, no papers have been studied unemployment specifically at the individual level as explicative variable of support for independence. However, both papers of Glen (2015) and Henderson, Delaney and Liñeira (2014) found out that areas in Scotland with high level of unemployment are more likely to vote Yes. Indeed, in the paper of Henderson, Delaney and Liñeira (2014), the authors sustained that the support for independence is larger among manual workers with few skills rather than workers with professional or managerial jobs. Furthermore, Glen (2015) pointed out the direct effect of economic factors over risk attitudes, and therefore over decisions on constitutional change. She argued that the Scots who had the least to lose economically were more prepared to assume the risks of dramatic political change. Finally, as Niedzwiedz and Kandlik-Eltanani (2014) suggested, the poor people expect from independence that the Scottish government will be in better position to reduce social inequalities than belonging to the United Kingdom. Hence, in a sense people with higher incomes feel more risk-averse since they have more to lose. In other words, today in Scotland workers of lower-class and unemployed people are more likely to be in favour of independence because they are more risk-taker than the upper-class.

On the other hand, it seems that in Catalonia the reverse case applies. From the results obtained in a research of the *Baròmetre d'Opinió Política* of June 2017 published by the *Centre d'Estudis d'Opinió* (CEO) – the official institute for public opinion research in Catalonia –, households with lower income levels tend to be more reticent for an independence process than households with higher incomes. Moreover, this study found out that when people have an unstable labour situation, such as being unemployed, people are less inclined towards a secession process compare to people having a more stable working situation (see tables in Appendix). Hence, people with weaker economic security

fear more risks for their economic situation and tend to be more in favour of independence. Thus, it could be interpreted as that the upper-class in Catalonia want to get independent to keep its benefits far away from Madrid.

These differences between both regions Catalonia and Scotland could be explained by other internal and cultural phenomena that this thesis does not try to explain. Nevertheless, it appears well-founded that economic well-being plays a role in the support for independence and that it makes sense to build distinct hypothesis if we whether consider Catalonia or Scotland. Therefore, I built the two-following hypothesis that come out of the previous reflexion:

Hypothesis 2*: Unemployed people are less likely to be in favour of independence in Catalonia.*

Hypothesis 3*: People with higher risk of being unemployed are more prone to support secession in Scotland.*

1.3. Model's consideration

Before entering directly into the model, I present above several concerns for the different models I built.

Particularity of Scottish and Catalan models

Because both models have been constructed on two distinct surveys, many independent variables differ between both regressions depending on the formulation of the questions. Nevertheless, both models are markedly similar.

Following the argument of unemployment and its empirical implication, prospects of finding employment would be interesting to analyse to understand if some people support independence because there are facing difficulties – or on the contrary some easiness – in finding work. In fact, during my research I happened upon an interesting variable for the Scottish Model that is especially answering to this idea of employment prospects. As I will present in the following section, the independent variable of risk unemployment is a simply question that is asking to the respondent: "During the next 12 months, how likely or unlikely is that you will be out of job?". Thus, this variable combines both economic security and fear through the risk of not finding a job.

In fact, the variable risk of unemployment is not the only one to combine both risk attitudes and economic security. Indeed, into the Catalan model the independent variable

risk has been obtained by asking to the respondent as follows: “People often face risks when taking economic decisions, professional decisions or decisions in other fields of life. How would you place yourself in a scale from 0 to 10, considering that 0 is “Not at all willing to take risks” and 10 “Totally willing to take risks”?”. Because the interviewer formulated the question in an implicit way, people could confuse their answer if they whether focused on the risk attitudes’ aspect or the economic security’s one of the question.

Control variables

Several controls can be useful to complete both models of Catalonia and Scotland. First, the basic ones should be applied in both models which are gender, age and education level. Indeed, for both regions women seem to support less independence than men because they tend to be more risk-averse (see for Catalonia Verge, Guinjoan and Rodon, 2015; for Scotland see Henderson, Delaney and Liñeira, 2014). Leaning on the previous literatures, differences in age had been noticed as well. Relying on the paper of Civit i Carbonell (2013), in Catalonia the youngest generation would tend to support more independence even if national identity is as strong for young as old people. In Scotland, both youngest and oldest generations are the more inclined to support secession. Finally, none current study has been conducted so far on education level and its impact on constitutional change. Nevertheless, it is thinkable that education level would be as useful as gender and age to control for both regressions.

Now focusing on more elaborate controls, I would rather talk to some controls that I do not use because they may represent some biased results. Indeed, I try to avoid post-treatment controls, which means the variables might be a consequence of risk attitude and/or unemployment. Under this perspective, I prefer to not include controls such as the Brexit intention of vote, the change in cost of live, income, political preferences and media preferences. However, I doubt about controlling for confidence in politicians. Thus, the following models always provide regressions with and without including trust in politicians.

Finally, notice into the next section that the models are presented in the chronological order. This is due to the fact that little by little I discovered interesting variables to implement into the different regressions. Hence, I prefer to let appear in my work several models that are not relevant as final one but that may help to understand how has been conducted my research.

2. Empirical results

The following results that I introduce below are all estimated from OLS regressions. Concerning the data, I use individual-level cross-sectional data.

2.1. Models

For Catalonia, I base my data on a survey of the Catalan population performed by the official institute for public opinion research in Catalonia, the *Centre d'Estudis d'Opinió* (CEO). I especially use the data wave of October 2017, which means that the interview had been performed following the referendum of October 1st.

As a dependent variable, I use the support for independence, which is asking as follows: "Do you want Catalonia to become a State?". The possible answers were 1= "Yes", 0= "No", and also 98= "Does not know" and 99= "Does not answer" which I drop the observations to turn it as a dummy variable. I implement different controls such as age, gender, the level of education, the first language spoken (1=Catalan, 2=Spanish, 3 =Others), the place of birth (1=Catalonia, 0=Other places), the confidence in the Spanish politicians (measured on a scale from 0 to 10) and the feeling of national identity (1= "Only Spanish", 2= "More Spanish than Catalan", 3= "Spanish as Catalan", 4= "more Catalan than Spanish", 5= "Only Catalan"). Indeed, I use these controls because on previous works they appeared as strong determinants for the support of independence in Catalonia (see Muñoz and Guinjoan, 2013; Muñoz and Tormos, 2015; Verge, Guinjoan and Rodon, 2015). Moreover, these controls should not be a consequence of both risk attitudes and unemployment so that they are decent confounders.

Now talking about the interesting independent variables, risk and unemployment are the keys of the model. Interestingly, risk is specifically pointing at economical and professional traits. The question is asking as follows: "People often face risks when taking economic decisions, professional decisions or decisions in other fields of life. How would you place yourself in a scale from 0 to 10, considering that 0 is "Not at all willing to take risks" and 10 "Totally willing to take risks"?". For unemployment, it is a simple dummy variable that takes the value 0 if the respondent is working and 1 if the respondent is unemployed.

Table 1 displays the OLS estimation of these variables with a total number of 1,164 observations. In fact, I provide two different regressions, the first one without including trust in Spanish politicians and the second one with, because I have some doubts concerning this variable and its post-treatment effects over risk and unemployment. The results I obtain are statistically significant for risk and unemployment and interestingly, the coefficient of risk is five times larger than the coefficient of unemployment (because risks is built on a scale of 10 and unemployment on a scale of 1, risk's coefficient as to

be multiplied by 10 to be compared with unemployment). As expected, risk attitudes are positively correlated with support for independence, and on the other hand being unemployed is negatively correlated with secession. In other words, the more you are risk-taker, the more you will support independence, which refers to *Hypothesis 1*. And if you are unemployed you are less likely to be in favour of independence (*Hypothesis 2*). For the rest of coefficients, there are for the majority robust as well. I could especially underline that both coefficients of national identity and language play an important determinant of support for secession in Catalonia.

Table 1. Catalonia's Model

	(1) Dropping trust in Spanish politicians	(2) Including trust in Spanish politicians
Risk	.0219***	.0225***
	(.0038)	(.00381)
Unemployment	–.0462**	–.0452*
	(.0234)	(.0233)
National identity	.2690***	.255***
	(.0105)	(.0108)
Trust in Spanish politicians		–.0217***
		(.00432)
Place of birth	.0529**	.0397
	(.0257)	(.0257)
Language	–.113***	–.116***
	(.0165)	(.0165)
Gender	.00278	.00172
	(.019)	(.0189)
Age	–.00127**	–.00109*
	(.00061)	(.000611)
Education level	.00359*	.00359*
	(.00217)	(.00216)
Constant	–.392***	–.298***
	(.0783)	(.0802)
Observations	1,177	1,168
R-squared	.579	.586

* P<0.1, ** P<0.05, *** P<0.01

Now for Scotland, my sources come from the *British Election Study*, which analyses the results of general election in United Kingdom since 1964. For my study, I use a data survey from April 2016, meaning just before the referendum in the U.K. for the Brexit (June 23th, 2016) and almost two years after the referendum for the independence of

Scotland (September 18th, 2014). Because the survey is made over the entire United Kingdom's population, I only keep the observations for people living in Scotland.

I use as dependent variable the results of what Scottish people voted for at the referendum in 2014. For the first regression, as controls I only use gender, age and the education level. For the other independent variables that I am particularly interested in, risk attitudes are measured on a scale from 1 to 4, with 1= "Very unwilling to take risks" and 4= "Very willing to take risks", with the question asking as follows: "Generally speaking, how willing are you to take risks?".

However, one problem occurs from this survey. Indeed, Scotland's dataset does not provide a dummy variable for unemployment such as in the Catalan one. Instead of, there is a variable of working status that is asking to the respondents "Which of these bests describe what you were doing last week". The possible answers go to 1= "Working full time" until 8= "Not in paid work for any other reason", where 5= "Unemployed and looking for job". Thus, I only keep the observations when it was equal to 1 ("Working full time") and 5 ("Unemployed and looking for job") to create a dummy variable such as unemployment in the Catalan model.

The first regression presented in table 2 – that provides the results of the Scottish model – seems to be in line with my expectation, which is that working status is positively correlated and significant with the support for independence (*Hypothesis 3*). However, the other coefficients are not at all robust, which is probably due to the small sample size (N=202) and the few controls used, which were only gender, age and education level.

From this consideration, instead of taking the vote for the referendum in 2014 as a dependent variable, I switch it for the intention of vote if there is a new referendum for secession. The question is asking as follows: "If there was another referendum on Scottish independence, how do you think you would vote?". People could choose between "Yes", "No", "I would not vote" and "I do not know". Dropping the two last choices, I keep only the observations within the answers "Yes" =1 and "No" =0 to create a dummy variable. Moreover, I add two new controls which are the country of birth (1=Scotland, 0=Other places) and the confidence in Parliament members (asking to people how confident they are over a scale of 7).

Thus, the sample size provided in regression (2) is much larger with 1,074 observations. Hence, the variables I am interested in, which are risk and working status are now both significant and positively correlated with support for independence. Hence it confirms both of *Hypotheses 1* and *3*. However, later when I try to study the regression of the interaction term between risk and working status, both coefficients of the working status and the interaction term are non-significant.

Therefore, in regression (3) instead of taking working status to measure unemployment, I rather use the variable of risk unemployment. This variable of risk unemployment is measured over a scale of 5 and is asking to the respondent: "During the next 12 months, how likely or unlikely is that you will be out of job?", with answers going from 1= "Very unlikely" to 5= "Very likely". Moreover, I add a new control to the previous regression, the feeling of being Scottish which refers to the sense of belonging to Scotland's nation (measured over a scale of 7). Hence, the sample size is now double compare to the previous regression (2) with N= 2,348, and thus the results obtained are more robust. Both coefficients of risk attitudes and risk of unemployment are significant and positively correlated with support for secession, which confirms both hypotheses; *Hypothesis 1: People that are more risk taker are more likely to be in favour of independence* and *Hypothesis 3: People with higher risk of being unemployed are more prone to support secession in Scotland*. Notice that her the coefficient of unemployment's risk is here a bit larger than the one of risk attitudes (need to multiply risk of unemployment by 5 and risk attitudes by 4 dues to their scale's construction to compare them).

Finally, the last regression number (4) just differs from the previous one (3) because of its inclusion of the control of trust in Parliament members. The results are almost identical to the previous regression (3), and thus, both hypotheses still hold.

In these two last regressions, a similar point with Catalonia's model is the important weight of national identity, which here refers to Scottishness. However, the difference is that in Catalonia risk attitudes' coefficient is larger than unemployment's one, instead that in the Scottish model the effect of unemployment's risk is a bit larger compare to the coefficient of risk attitudes over secession. This last point will be unlighted later. For now, the next section will focus on the effects of the interaction term between risk attitudes and unemployment over secession in both regions.

Table 2. Scotland's Model

	(1) Referendum vote	(2) Support for independence	(3) Support for independence	(4) Support for independence
Risk	.041	.0726***	.0446***	0.0464***
	(.0525)	(.0215)	(.0141)	(0.0139)
Working status	.103**	.043**		
	(.0423)	(.0198)		
Risk Unemployment			.046***	.039***
			(.00824)	(.00819)
Trust in Parliament members		–.0754***		–.0564***
		(.00987)		(.00652)
Scottishness			.101***	.0969***
			(.00667)	(.0066)
Country of birth		.180***	–.115***	–.104***
		(.035)	(.0293)	(.0289)
Gender	–.0215	–.0632**	–.0643***	–.0558***
	(.0725)	(.0306)	(.0195)	(.0193)
Age	–.00322	–.00251*	–.00361***	–.00352***
	(.0029)	(.00132)	(.000715)	(.00071)
Education level	–.0154	.0216*	.0134*	.0206***
	(.0296)	(.0125)	(.00753)	(.00747)
Constant	.435	.499***	.0153	.171**
	(.272)	(.128)	(.0834)	(.0843)
Observations	202	1,074	2,348	2,329
R-squared	.044	.093	.145	.174

* P<0.1, ** P<0.05, *** P<0.01

2.2. Interaction term between risk and unemployment

Now going back to Catalonia, I try to analyse if there may be heterogeneous effects from the interaction of risk on being unemployed or not. As the previous table 1, table 3 provides two different regressions (dropping and including trust in Spanish politicians), including the interaction term between risk and unemployment. The interaction term obtained is significant and negative for regression (1) when dropping the control for trust in Spanish politicians, but this does not mean that unemployed risk-taker people are not in favour of independence. Let's interpret it more in details. With its negative value, the coefficient ß3 of the interacted terms between risk attitudes and unemployment means that, the effect of being more risk-taker is greater for employed people than unemployed

ones. With this result, I may suspect that an unemployed person is more likely to be in favour of independence if he is risk-taker rather than if he was risk-averse. To confirm the results obtained, I plot both graphs of marginal effects of risk over unemployment and the predictive margins of unemployment at the different levels of risk.

Table 3. Catalonia's Model including interaction term

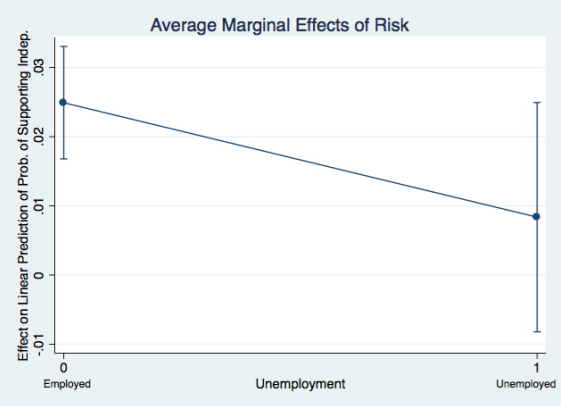
	(1)	(2)
	Dropping trust in Spanish Politicians	Including trust in Spanish Politicians
Risk	.0249***	.0251***
	(.00414)	(.00414)
Unemployment	.058	.0505
	(0.0624)	(.0629)
Risk*Unemployment=1	–.0165*	–.0151
	(.00919)	(.00924)
National identity	.269***	.256***
	(.0105)	(.0108)
Trust in Spanish politicians		–.0217***
		(.00432)
Place of birth	.049*	.0362
	(.0258)	(.0258)
Language	–.114***	–.116***
	(.0165)	(.0165)
Gender	.00144	.000308
	(.019)	(.0189)
Age	–.00128**	–.00111*
	(.00061)	(.00061)
Education level	.00369*	.00368*
	(.00217)	(.00216)
Constant	–.406***	–.311***
	(.0787)	(.0805)
Observations	1,177	1,168
R-squared	.580	.587

* P<0.1, ** P<0.05, *** P<0.01

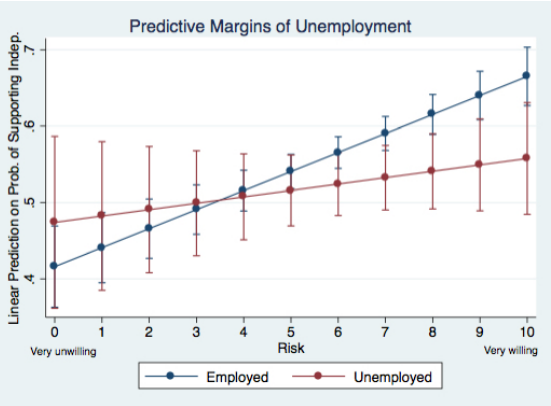
The first graph displays the marginal effects of risk over unemployment. As expected in Catalonia, risk attitudes have a greater effect over employed people than unemployed one for supporting secession. To show it clearly, the second graph displays the predictive margins of unemployment at the different levels of risk. The advantage of this graph is that it presents distinctly both regressions of employed people (in blue) and unemployed one (in red). To see it from another angle, graph 7 in appendix shows the marginal effect

of unemployment at the different levels of risk. Indeed here, unemployment has a greater impact over risk-averse people for supporting independence. Going back to graph 2, the result tends to show that the predicted probability of supporting independence is stronger on employed people than unemployed one at a high-risk level. However, at a low-risk level is the exact opposite that occurs, which is that unemployed people are more likely to support independence than employed ones but this difference is not statistically significant. Nevertheless, the results are in line with the statement of *Hypothesis 2*: *Unemployed people are less likely to be in favour of independence in Catalonia*. In appendix are presented the same graphs of 1 and 2 but incorporating trust in Spanish politicians into the regression (respectively graphs 5 and 6). Their results are practically equivalent to graph 1 and 2.

For Catalonia, dropping trust in Spanish politicians:



Graph 1



Graph 2

Now going back to Scotland, the coefficient of the interaction term between risk attitudes and risk of being unemployed presented in table 4 is not robust but still negative as expected for both regressions (whether including or dropping confidence in Parliament members). Thus, it seems that the same interpretation can be made as Catalonia, which is that being more risk-taker has a greater impact on secession over people who do not risk unemployment than those who do. On the other way around, it could mean that the more likely you are of getting unemployed, the smaller the effect on risk attitudes over secession. However here again this difference is not statistically significant. Nevertheless, because of the small size of the interaction's coefficient an additional interpretation could be that risk attitudes may affect almost similarly people who risk unemployment and those who do not. The two following graphs could enlighten me to interpret this primitive inspiration.

Table 4. Scotland's Model including interaction term

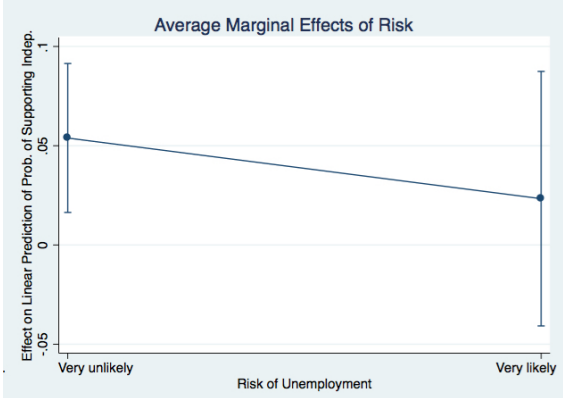
	(1) Dropping trust in Parliament members	(2) Including trust in Parliament members
Risk	.0615**	.0657**
	(.0274)	(.027)
Risk of Unemployment	.0657**	.0615**
	(.0285)	(.0282)
Risk*Risk of Unemployment	–.00764	–.00874
	(.0106)	(.0105)
Trust in Parliament members		–.0565***
		(.00652)
Country of birth	–.114***	–.104***
	(.0293)	(.0289)
Scottishness	.101***	.0968***
	(.00667)	(.0066)
Gender	–.0642***	–.0557***
	(.0195)	(.0193)
Age	–.00359***	–.0035***
	(.000716)	(.000711)
Education level	.0134*	.0206***
	(.00754)	(.00748)
Constant	–.0294	.12
	(.104)	(.104)
Observations	2,348	2,329
R-squared	.146	.174

* P<0.1, ** P<0.05, *** P<0.01

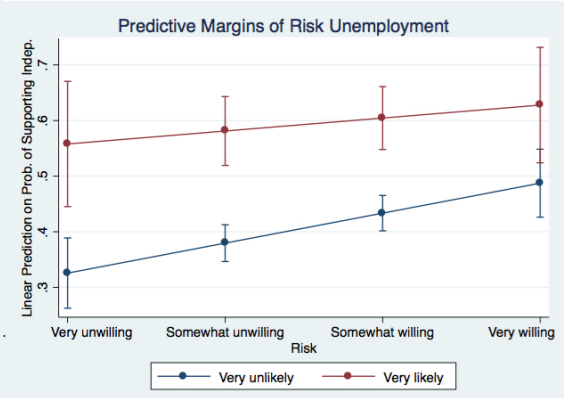
Graph 3 presents the marginal effects of risk over the risk of unemployment for supporting secession. Not surprising, the same effect in Scotland appeared as in Catalonia. Indeed, risk attitudes have a greater impact on people who do not risk turning unemployed than those who do for supporting secession. Now graph 4 displays the predictive margins of unemployment's risk at the different levels of risk. In appendix are presented the same graphs as 3 and 4 but including the trust in the Parliament members into the regression (respectively graphs 8 and 9). They do present similar results to graphs 3 and 4. To see it from another angle, graph 10 in appendix shows the marginal effects of unemployment at the different levels of risk. Indeed here, unemployment has a greater impact over risk-averse people for supporting independence. Coming back to graph 4, it relies on the last interpretation I made on table 4, which is that the effect of unemployment's risk over secession's support is constant and risk attitudes matter irrespective of unemployment's risk. Still, at a high-risk level people who risk or not to turn unemployed have a higher predicted probability to support independence than at a

low-risk level. More generally, it confirms the *Hypothesis 1*, which is that people that are more risk-taker will support more independence. Moreover, this last graph tends to show that people who are more likely to be unemployed are more likely to support independence, even if there are risk-averse. This is in line with the *Hypothesis 3* mentioned previously: *People with higher risk of being unemployed are more prone to support secession in Scotland*. However, another aspect that could be underlined is that the effect of risk unemployment over secession tends to converge between people that are very likely and unlikely to get unemployed as they are more risk-taker. This last observation could support the idea that risk attitudes have a stronger impact at a high-risk level over secession's support independently from the level of risk of unemployment. Following this interpretation's idea, the difference here with the Catalan's graph number 2 is that both lines are not crossing each other. Instead that in the Catalan model, because both lines of employed and unemployed people cross each other, it could mean that the economic argument has a stronger effect in Catalonia than in Scotland over independence's support. Therefore, I may assume that the economic situation of a household seems to matter more in Catalonia than in Scotland to shape its support for independence. Again, this is just a preliminary intuition that needs to be confirmed into the next section.

For Scotland, dropping Trust in Parliament members:



Graph 3



Graph 4

2.3. The influence of the economic argument

From the previous results obtained, it might be likely that the economic argument plays a more important role in determining the final decision of people in Catalonia than in Scotland to support or not a constitutional change. Indeed, the previous graphs 2 and 4 including the interaction term let me think that economic security has a greater impact over Catalan's population rather than on Scots. Therefore, in the next table 5, I run a regression similar to the regression (1) of table 1 for Catalonia. Indeed, I keep the same controls and dependent variable. However, because here I am not looking anymore at risk and unemployment, I drop them and I implement a new independent variable that focuses on economic expectations of Catalonia. The variable from the survey of the CEO is asking as follows to the respondent: "One year onwards, would you say that the economic situation of Catalonia will improve, will remain as it is now, or will worsen?". Thus, the three possible answers were "Worsen" =0, "Remain as it is" =0.5 and "Improve" =1. Moreover, because now I am interested in comparing all coefficient's size between each other, I convert all variables on a scale from 0 to 1. Thus, I change national identity from a scale of 5 to a scale of 1 starting from 0= "Only Spanish" to 1= "Only Catalan". Language passed from a scale of 3 to a scale of 1, with 0=Catalan, 0.5=Spanish and 1=Others. I changed the value of gender as 0=Man, 1=Women, instead of 1=Man and 2=Women. Finally, the education level is now going from 0= "Not able to read or write" until 1= "PhD/doctorate" instead of being built over a scale of 11. Hence, only age is not directly comparable with the rest of coefficients (scale from 18 to 93). The results are presented in table 5 below.

As expected, the economic expectations play an important role in guiding people on supporting independence or not. Indeed, the coefficient in question is statistically significant and almost as large as language's coefficient. It is even more explicative for the model than the place of birth. Not surprisingly, the education level is as important as economic expectations and its sign supposes that the higher the education level, the more likely is the support for independence. Nevertheless, the national identity still remains the main factor in explaining the support for secession. Concerning the sign of economic expectations sign, it is positive. Hence, it seems to support the same theoretical argument of *Hypothesis 2*, which is that the more people are likely to see the global economy of Catalonia as improving, and thus feeling less risky for their job/income/business, the more they will be in favour of independence in Catalonia.

Table 5. Catalonia's Model: Economic expectations

	Support for independence
Economic expectations	.173***
	(.0266)
National Identity	1.015***
	(.0482)
Place of Birth	.0519*
	(.0289)
Language	–.21***
	(.0383)
Gender	.0155
	(.0217)
Age	–.0015**
	(.000677)
Education Level	.161***
	(.0504)
Constant	–.196***
	(.063)
Observations	893
R-squared	.58

* P<0.1, ** P<0.05, *** P<0.01

Following the same procedure as in Catalonia, I replicate a similar model for Scotland. I use the same regression as used in table 2, regression (3). Dropping both variables of risk attitudes and risk unemployment, I instead implement the variable economic expectations. The variable is almost the same as obtained in the Catalan survey, instead that here the question is asking as follows in the *British Election Study*: "Do you think that the economy is getting better, getting worse or staying the same?". Thus, the only difference is instead of asking people over the twelve next months as in Catalonia, people are asking here about the current economic situation. Nevertheless, it is likely to guess that both questions could be mainly interpreted in a same way, and thus, it will not affect their answers. People could answer on a range of five alternatives, starting from "Getting a lot worse" =0 and ending to "Getting a lot better" =1. Moreover, as in Catalonia's model, I convert on a common scale all variables (expect age) to compare all their coefficients. I modify Scottishness with a scale from 0= "Not at all Scottish" to 1= "Completely Scottish" instead of using a scale of 7. Gender is now as Man=0 and Women=1 instead of taking respectively the values of 1 and 2. Finally, the education level is going from 0= "No qualifications" to 1= "Postgraduate" instead of using a scale of 5.

Here again, age is not directly comparable to other coefficients with a scale going from 18 until 91. The results are provided below in table 6.

Table 6. Scotland's Model: Economic expectations and Left or right preferences

	(1) Support for independence	(2) Support for independence	(3) Support for independence
Economic expectations	–.549***		–.351***
	(.0377)		(.0409)
Left or right preferences		–.701***	–.556***
		(.0399)	(.0429)
Country of birth	–.114***	–.112***	–.0988***
	(.0273)	(.0272)	(.027)
Scottishness	.597***	.592***	.566***
	(.0375)	(.0376)	(.0374)
Gender	–.0821***	–.0775***	–.0798***
	(.018)	(.0185)	(.0183)
Age	–.00564***	–.00396***	–.00457***
	(.000637)	(.000651)	(.000653)
Education level	.106***	.0399	.0596
	(.0349)	(.0369)	(.0366)
Constant	.557***	.625***	.719***
	(.0556)	(.0570)	(.0579)
Observations	2,481	2,256	2,226
R-squared	.206	.254	.276

* P<0.1, ** P<0.05, *** P<0.01

Surprisingly, the result presented in regression (1) provided me the coefficient of economic expectations as large as the one of national identity (Scottishness). This will probably conduct me to correct my statement over the weight of the economic argument in Scotland. In fact, this result could let me think back that the interaction term of Scotland in graph 4 did not mean that the economic argument is not as strong as in Catalonia's model because both lines were not crossing each other. Otherwise, this meant that the heterogeneous effects of risk attitudes across unemployment were much larger in Catalonia that in Scotland. In other words, Catalan's population is more sensitive to actual risks such as unemployment than Scots. Nevertheless, the negative sign of economic expectations' coefficient is in line with my expectations of *Hypothesis 3*, which is that

the more people are economically prosper, and thus riskier concerning their job/money/business, the less likely they will support independence.

Another aspect to take in consideration is that economic expectations in the case of Scotland might be biased because it could be explained by other factors that are unknown to my knowledge. Indeed, I make the hypothesis that left or right preferences in politics may be an explicative factor of support for secession and that economic expectations are a consequence of this factor. In fact, in regression (2) I regress the same equation as previously but I drop economic expectations' variable for the one of left or right preferences. The variable is built on a scale from 0= "Left" to 1= "Right" (with a measurement of 0.1) and respondent were asking as follows: "In politics people sometimes talk of left and right. Where would you place yourself on the following scale?". As displays the result of regression (2), it seems that left or right preferences affects strongly the support for independence, even more than economic expectations in the previous regression. Moreover, its negative sign seems to follow the argument of *Hypothesis 3*, which is that people that belong to the left-wing, and thus that support more social equalities such as fighting against precarity, are more likely to support secession. To make sure that my hypothesis regarding the causality of left and right preferences on economic expectations is right I combine those both variables in regression (3). The results obtained confirm the previous statement. Indeed, economic expectations are now less strong than in the first regression and this demonstrates that economic expectations are not a correct confounder due to its spurious effects. Thus, economic expectations are very likely to be a consequence of left or right preferences. However, left or right preferences is probably not the only explicative factor of the support for independence, even if the R-squared increased between the two first regressions. Hence, this variable is not enough to get a sustainable model and thus in further studies it would be interesting to seek out more factors that could explain this support for secession in Scotland.

3. Conclusion

From all these results, the three hypotheses are sustainable. First, it is well confirmed that risk-aversion affects negatively the support of secession in both regions. Indeed, a risk-averse person is less likely to be in favour of a constitutional change. Thus, risk attitudes are an explicative variable for the support of independence in both regions. Then depending in which region, material security affects positively(negatively) the support for independence in Catalonia(Scotland). In fact, the upper-class in Catalonia is more likely to be in favour of independence as the lower-class in Scotland.

Apart from risk attitudes, national identity and language remains the main factors in Catalonia of support for secession (see Muñoz and Guinjoan 2013; Civit i Carbonell 2013; Sala i Martin, 2014). Moreover, economic expectations seem to matter for Catalan population in guiding them to a constitutional change. For Scotland, national identity plays an important role as well in determining the support for secession.

However, some limitations appear. First, the role of unemployment is not clear as determining households' economic well-being. Indeed, in both regions the concerned variable was not always significant even if its sign is in line with the hypotheses displayed. Thus, it is not possible to conclude that unemployment is a clear factor for supporting independence. Second, Scotland's model is not robust with its low R-squared value due to a lack of consistent determinants in supporting secession. Indeed, the last model presented in section 2.3 let appear that economic expectations may not be a consistent factor in explaining the support for independence. But in fact, it is because secession's support is first explained by other factors such as left or right preferences. Thus, adding with the results of graph 4 that suggests that risk of unemployment matters irrespective of risk attitudes, it still not clear enough to assume that the economic argument is weak in Scotland.

From another angle, the weak and small size of the interaction term's coefficient in table 4 might not be explained because of a lack of interest for the economic argument from the Scots, if not because the problem already comes from the uncertainty to get a work, and thus, risk attitudes are affected as well. In other words, because both variables of unemployment's risk and risk attitudes shared related features, it may create a bias effect between both of them.

Nevertheless, to confirm these results of Catalonia's model it would be interesting in further research to conduct an experiment by informing whether positively or negatively individuals about the economic outcomes if secession would occur (see previously in section 1.1). The aim would be to study if risk attitudes might create heterogeneous effects across unemployment by running an interaction term between risk, unemployment and whether positive, negative or control group. Finally regarding

Scotland, first it would be interesting to seek out the main determinants of secession's support to obtain a robust model. After this finding, other factors than unemployment for analysing material security may be used to understand the role of economic security in determining the support for independence.

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Appendix

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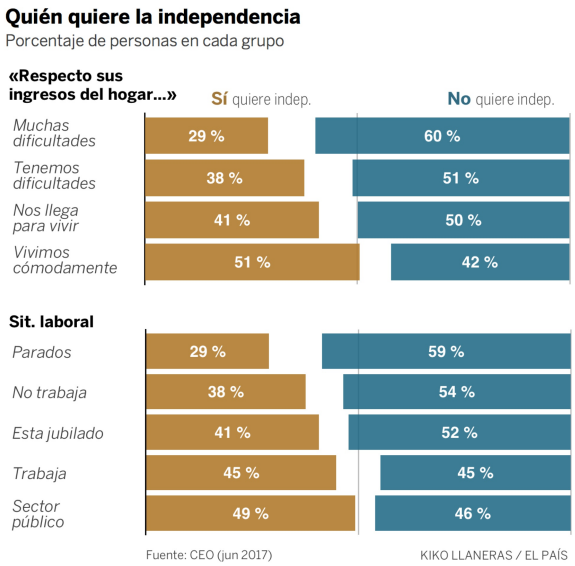

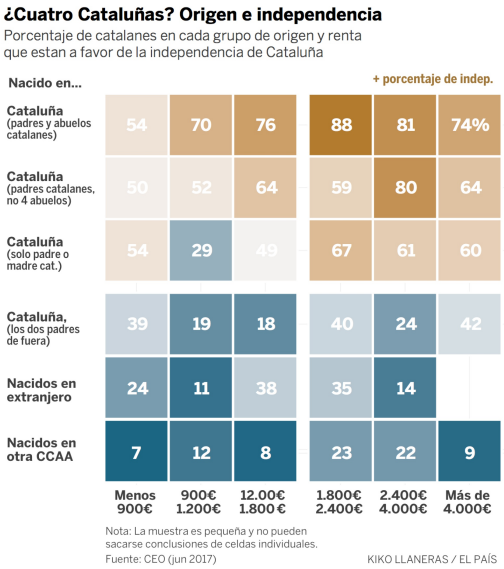

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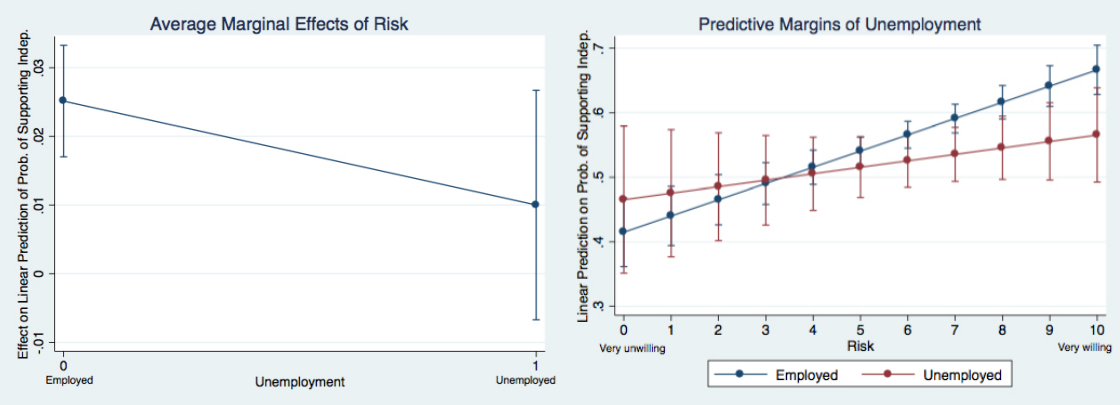
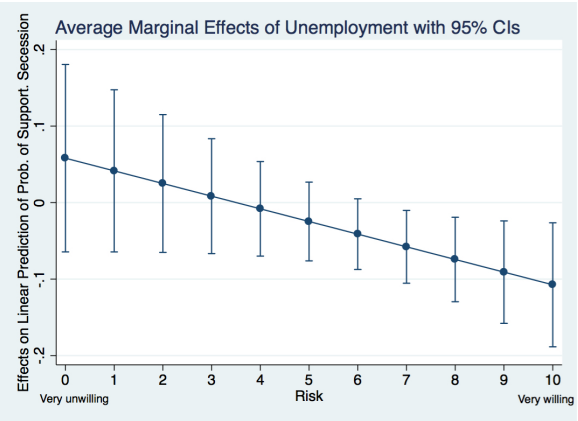
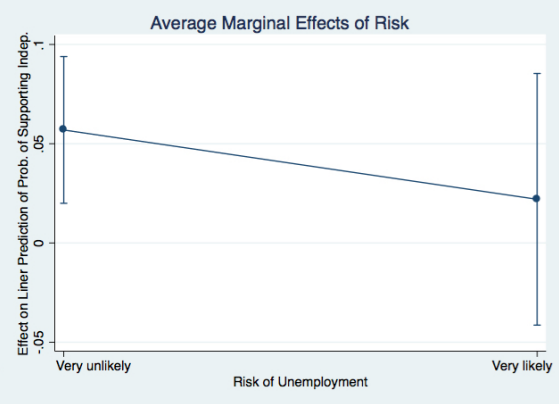


Graph 5 (with trust in Spanish politicians) Graph 6 (with trust in Spanish politicians)

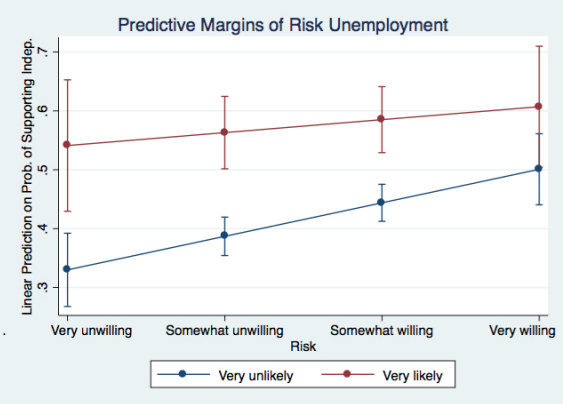


Graph 7 (without trust in Spanish politicians)

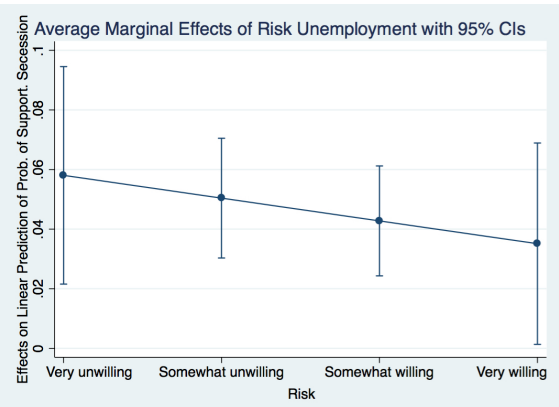
For Scotland:



Graph 8 (including trust in MP)



Graph 9 (including trust in MP)



Graph 10 (without trust in MP)